REMARKS

The claims pending are 1-44, 55-58, and 62-64.

Claim 64 is allowed.

Claims 2-5, 14-25, and 41-44 are stated to be allowable if rewritten.

Claims 1, 6-13, 26-40, 55-58, and 62-63 are rejected.

As a general proposition, applicants respectfully submit that there are clear legal and factual deficiencies in the rejections as stated in the Office action. The rejections are based on an improper statement of the law as it relates to whether disclosure of a genus (e.g., polyethylene glycol) anticipates or renders obvious a subgenus (e.g., alcohol effective to increase copper loading) or species (e.g., triethylene glycol). They are also based on an improper statement of the law as it relates to inherency: a characteristic is inherent only if it *necessarily* flows from the composition described; and the burden is *not* on the applicant to prove non-inherency. In view of these deficiencies, applicants respectfully submit this application is appropriate for referral to the Patent Office's Pre-Appeal Brief Conference Pilot Program if matters cannot be resolved prior to issuance of a final Office action.

Applicants request reconsideration of the rejections for the reasons stated below.

Claim 1

Claim 1 is rejected under 102(b) in view of the following references: Ferrier '130, Ferrier '029, Ferrier '701, and JP 60-149790. And claim 1 is rejected under 103(a) in view of the following references: Ferrier '503, Ferrier '272, Ferrier '784, Ferrier '566, Ferrier '948, and Montano et al. '878.

Claim 1: 102(b) and Ferrier References

Claim 1 is patentable under 102(b) over Ferrier '130, '029, and '701 because claim 1 requires "an alcohol which is effective to increase copper-loading in the composition." This is an express requirement which cannot be ignored in assessing patentability.

The rejection should be withdrawn in view of the following:

A) Ferrier's genus "polyethylene glycol" which may *encompass* certain compounds of the subgenus "alcohol effective to increase copper loading" does not *anticipate* this subgenus because there is no further specific teaching in the reference in the direction of the subgenus; and

B) there has been no showing that Ferrier's "polyethylene glycol" inherently is effective to increase copper loading.

Regarding A, "polyethylene glycols" is a large ***genus*** which encompasses thousands of species. It encompasses "triethylene glycol," "tetraethylene glycol," "pentaethylene glycol," "decaethylene glycol," and alcohols any large number of repeating units. Relative to this genus, only a relatively small number of species compounds make up the subgenus of "effective to increase copper-loading in the composition." As stated in MPEP 2131.02, disclosure of a genus like "polyethylene glycols" does not anticipate a species encompassed thereby unless there is further specific teaching in the reference in the direction of the species:

> A GENERIC CHEMICAL FORMULA WILL ANTICIPATE A CLAIMED SPECIES COVERED BY THE FORMULA WHEN THE SPECIES CAN BE "AT ONCE ENVISAGED" FROM THE FORMULA.
>
> When the compound is not specifically named, but instead it is necessary to select portions of teachings within a reference and combine them...anticipation can only be found if the classes...are sufficiently limited or well delineated.

> One may look to the preferred embodiments to determine which compounds can be anticipated. (citing In re Petering, 301 F.2d 676, 133 USPQ 275 (CCPA 1962))

In the present situation the class "polyethylene glycol" encompasses thousands of compounds with any number of repeating units and therefore cannot fairly be said to be "sufficiently limited or well delineated." Nowhere does the reference suggest selecting any species which increase copper loading. In fact, Ferrier was oblivious to the fact that certain species increase copper loading, stating only that the compound helps in "creating improved bonding and reliability between metal surfaces and polymeric bonding materials." Col. 5, line 41. Accordingly, since Ferrier's polyethylene glycols are not "sufficiently limited or delineated" around the subgenus of alcohols effective to increase copper loading, there is no anticipation.

With respect to B, the Office states this disclosure of polyethylene glycol constitutes anticipation of the requirement of claim 1 for "an alcohol effective to increase copper loading":

> The reference clearly teaches polyethylene glycols as examples of the alcohols useable and applicant has not provided any evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to increase copper loading in the composition. Office action, p. 3.

The Office's attention is directed to MPEP 2112. The burden is not on the applicants to provide "evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to increase copper loading in the composition." Rather, ***the Office*** must establish by fact or technical reasoning why it is necessary that the Ferrier compositions increase copper-loading:

> Inherency, however, may not be established by *probabilities* or *possibilities*. The mere fact that a certain thing ***may***

> result from a given set of circumstances is not sufficient. (MPEP 2112 (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999))) (emphasis added)
>
> In relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic ***necessarily*** flows from the teaching of the applied prior art. (MPEP 2112 (citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990))) (emphasis added)

The Office has not demonstrated the inherency of this requirement in the Ferrier compositions. No basis in fact or technical reasoning has been asserted as to why increased copper loading would necessarily flow from any alcohol, generally, and from Ferrier's alcohols, specifically. In fact, one is inclined to conclude to the contrary because:

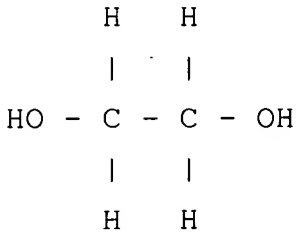
> 1) Ferrier states that the function of the water soluble polymers with halide in the proper combination is to improve bonding and reliability, and is wholly silent as to any function related to copper-loading; and
>
> 2) Ferrier's preferred water soluble polymers are, in contrast to alcohols described in applicants' specification as increasing copper loading, extremely large compounds: the molecular weights of preferred compounds Carbowax and Carbowax MPEG 2000 are 750 and 1800-2200, respectively.

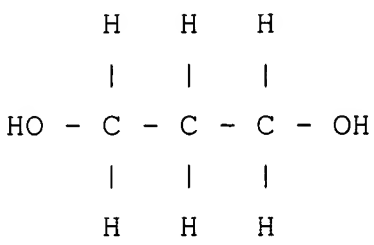
Claim 1 is therefore patentable over Ferrier '130, '029, and '701 because its subgenus is not anticipated by the reference's genus, and because inherency has not been established.

Claim 1: 102(b) and JP-60-149790

With respect to JP 60-149790 the Office stated on page 4 of the Office action that it would forward the undersigned a full translation. This has not yet been received.

The reference as characterized in the English-language abstract does not anticipate claim 1 because, *inter alia*, it does not disclose the requirement for "an alcohol effective to increase copper loading," and because it is not clear if the specific alcohols disclosed therein would inherently have this characteristic. The abstract provided by the Office states "Polyhydric alcohol is, e.o., ethylene glycol or propylene glycol etc." This does not make sense because neither ethylene glycol nor propylene glycol ***is*** a polyhydric alcohol — both are dihydric:





Does the JP patent disclose use of ethylene glycol and propylene glycol? Or does it disclose the use of some "polyhydric" derivative thereof? "Polyhydric" usually means "containing more than two hydroxyl groups," but it is possible the JP reference meant it to mean "two or more hydroxyls." The only way to determine this is with a full translation.

Note also that in several instances in the JP abstract the additive is referred to as a polyhydric *phenol*. There is an

obvious translation error in the abstract because it makes no sense. Perhaps the additives are polyhydric alcohols or polyhydric phenols *derived from* ethylene glycol or propylene glycol. In any event, any meaning given to the abstract would be speculation because of the abstract's obvious inconsistencies.

The definition of polyhydric is less important than whether the alcohols disclosed in the JP patent correspond to any of the alcohols stated in applicants' specification to "increase copper loading." If there is correspondence, then it may be reasonable to infer that the JP alcohols would increase copper loading. The rejection therefore cannot fairly be sustained until a translation is made.

Accordingly, applicants respectfully submit that the PTO's reliance on the JP ***abstract*** for what the ***reference*** discloses is improper. In the recent case of Ex parte Gavin, 62 USPQ2d 1680 (PTO Bd Pat Apps 2001), the Board vacated rejections based on two Japanese abstracts, emphasizing the following:

> "Abstracts are often not written by the author of the underlying document, and may be erroneous or misleading--in virtually all cases, they are incomplete."
>
> "Generally an abstract does not provide enough information to permit an objective evaluation of the validity of what it describes."
>
> "[A]n abstract is even less reliable a basis to extrapolate the alleged teachings of the underlying document to different circumstances. "
>
> "Abstracts function to alert a reader to disclosures of possible interest. They are little more reliable than headlines or brief newspaper articles."
>
> "Citation of an abstract without citation and reliance on the underlying scientific document itself is generally inappropriate where both the abstract and the underlying document are prior art."

While the Board states that reliance on abstracts without specific reliance on the teachings expressed in the underlying document is generally inappropriate, it is especially inappropriate here where the abstract contains obvious errors on its face.

The rejection of claim 1 in view of JP 60-149790 should therefore be withdrawn and restated, if appropriate, once a translation is available.

Claim 1: 103(a) and Ferrier References

The Office states Ferrier's disclosure of polyethylene glycol renders obvious the requirement of claim 1 for "an alcohol effective to increase copper loading":

> The reference clearly teaches polyethylene glycols as examples of the alcohols useable and applicant has not provided any evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to increase copper loading in the composition. Office action, p. 7.

The rejection should be withdrawn for the following reasons:

A) Ferrier's genus "polyethylene glycol," which may *encompass* certain compounds of the subgenus "alcohol effective to increase copper loading," does not *render obvious* this subgenus because there is no further specific teaching in the reference in the direction of the subgenus; and

B) there has been no showing that Ferrier's "polyethylene glycol" inherently is effective to increase copper loading.

Regarding A, the Office's attention is directed to MPEP 2144.08. Simply disclosing a genus such as "polyethylene glycol" does not render all encompassed subgenuses and species obvious:

> [t]he fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. (citing In re Baird, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir.

> 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."))

According to MPEP 2144.08(II)(A), in determining whether a subgenus or species is obvious in such a situation, the Office should:

> - compare the [disclosed prior art genus] to the claimed species or subgenus to determine the differences [and]
>
> - determine whether one of ordinary skill in the relevant art would have been motivated to make the claimed invention as a whole, i.e., to select the claimed species or subgenus from the disclosed prior art genus.

This includes, among other things:

(a) Considering the size of the genus;

(b) Considering the express teachings; and

(c) Considering the teachings of structural similarity.

Here, the Office has done none of these things but has, instead, attempted to pass the burden to applicants to prove non-obviousness. Nonetheless, considering factors (a), (b), and (c), it is evident that (a) the Ferrier genus "polyethylene glycols" is enormous since it encompasses "triethylene glycol," "tetraethylene glycol," "pentaethylene glycol," "decaethylene glycol," and alcohols having any large number of repeating units. Regarding (b) and (c), Ferrier's express teachings are to select the very large polymeric species available under the Carbowax name, which are wholly distinct from the much simpler compounds applicants have shown to increase copper loading. Moreover, Ferrier appears to have been unaware of even the existence of a subgenus of compounds which increases copper loading because he only states that his polymers help in "creating improved bonding

and reliability between metal surfaces and polymeric bonding materials." Col. 5, line 41.

With respect to B, the burden is not on the applicants to provide "evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to increase copper loading in the composition." Rather, ***the Office*** must establish by fact or technical reasoning why it is necessary that the Ferrier compositions increase copper loading:

> Inherency, however, may not be established by *probabilities* or *possibilities*. The mere fact that a certain thing ***may*** result from a given set of circumstances is not sufficient. (MPEP 2112 (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999))) (emphasis added)

> In relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic ***necessarily*** flows from the teaching of the applied prior art. (MPEP 2112 (citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990))) (emphasis added)

The Office has not demonstrated the inherency of this requirement in the Ferrier compositions. No basis in fact or technical reasoning has been asserted as to why increased copper loading would necessarily flow from any alcohol, generally, and from Ferrier's alcohols, specifically. In fact, one is inclined to conclude to the contrary because:

> 1) Ferrier states that the function of the water soluble polymers with halide in the proper combination is to improve bonding and reliability, and is wholly silent as to any function related to copper-loading; and
>
> 2) Ferrier's preferred water soluble polymers are , in contrast to alcohols described in applicants' specification as increasing copper loading, extremely large compounds: the molecular weights of preferred compounds Carbowax and Carbowax MPEG 2000 are 750 and 1800-2200, respectively.

Claim 1 is therefore patentable over these additional Ferrier references.

Claim 1: 103(a) and Montano et al.

The Office states Montano et al.'s disclosure of polyethylene glycol renders obvious the requirement of claim 1 for "an alcohol effective to increase copper loading":

> The reference clearly teaches polyethylene glycols as examples of the alcohols useable and applicant has not provided any evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to increase copper loading in the composition. Office action, p. 10.

The rejection should be withdrawn for the following reasons:

A) Montano et al.'s genus "polyethylene glycol" which may *encompass* certain compounds of the subgenus "alcohol effective to increase copper loading" does not *render obvious* this subgenus because there is no further specific teaching in the reference in the direction of the subgenus; and

B) there has been no showing that Montano et al.'s "polyethylene glycol" inherently is effective to increase copper loading.

Regarding A, the Office's attention is directed to MPEP 2144.08. Simply disclosing a genus such as "polyethylene glycol" does not render all encompassed subgenuses and species obvious:

> [t]he fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. (citing In re Baird, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."))

Here, the Office has improperly attempted to pass the burden to applicants to prove non-obviousness. Nonetheless, considering factors (a), (b), and (c) discussed above, it is evident that (a) the Montano et al. genus "polyethylene glycols" is enormous since it encompasses "triethylene glycol," "tetraethylene glycol," "pentaethylene glycol," "decaethylene glycol," and alcohols having any number of repeating units. Regarding (b) and (c), Montano et al.'s express teachings are to select the very large polymeric species available under the Carbowax and Pluronics names, which are wholly distinct from the much simpler compounds applicants have shown to increase copper loading. Moreover, Montano et al. appear to have been unaware of even the existence of a subgenus of compounds which increases copper loading because the reference is conspicuously silent in this regard.

With respect to B, the burden is not on the applicants to provide "evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to increase copper loading in the composition." Rather, ***the Office*** must establish by fact or technical reasoning why it is necessary that the Montano et al. compositions increase copper loading:

> Inherency, however, may not be established by *probabilities* or *possibilities*. The mere fact that a certain thing ***may*** result from a given set of circumstances is not sufficient. (MPEP 2112 (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999))) (emphasis added)

> In relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic ***necessarily*** flows from the teaching of the applied prior art. (MPEP 2112 (citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990))) (emphasis added)

The Office has not demonstrated the inherency of this requirement in the Montano et al. compositions. No basis in fact or technical reasoning has been asserted as to why increased copper loading would necessarily flow from any alcohol, generally, and from Montano et al.'s alcohols, specifically. In fact, one is inclined to conclude to the contrary because Montano et al.'s preferred water soluble polymers are, in contrast to alcohols described in applicants' specification as increasing copper loading, extremely large compounds (Carbowax and Pluronics).

Claim 1 is therefore patentable over Montano et al.

Claims 2 through 5

These claims were stated to be allowable.

Claim 6: 102(b) and JP 60-149790

Claim 6 was rejected JP 60-149790 for the same reasons as claim 1. Claim 6 requires incorporation of a dihydric alcohol effective to increase copper loading. The JP abstract refers to "Polyhydric alcohol is, e.o., ethylene glycol or propylene glycol etc." While ethylene glycol and propylene glycol are dihydric, it appears the JP reference may be describing some sort of polyhydric variation. The Office stated on page 4 of the Office action that it would forward the undersigned a full translation. This has not yet been received. Once this is available perhaps this will clarify whether the compositions of the JP reference are dihydric or polyhydric. Accordingly, it is respectfully submitted that, for the reasons stated by the Board in the Gavin case, the rejection of claim 6 in view of JP 60-149790 should be withdrawn and restated, if appropriate, once a translation is available.

Claim 7-9: 103(a) and JP 60-149790

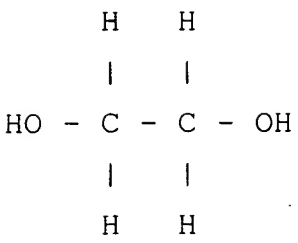
Claims 7-9 respectively require that the alcohol which increases copper loading is 0.5-20% dihydric alcohol, an oligomeric dihydric alcohol, or 0.5-20% oligomeric dihydric alcohol. The JP abstract refers to "Polyhydric alcohol is, e.o., ethylene glycol or propylene glycol etc." While ethylene glycol and propylene glycol are dihydric, it appears the JP reference is describing some sort of polyhydric variation.

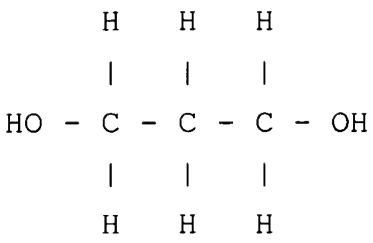
The Office stated on page 4 of the Office action that it would forward the undersigned a full translation. This has not yet been received. Once this is available perhaps this will clarify whether the compositions of the JP reference are dihydric or polyhydric. Accordingly, it is respectfully submitted that, for the reasons stated by the Board in the Gavin case, the rejection of claims 7-9 in view of JP 60-149790 should be withdrawn.

Moreover, this rejection - inasmuch as it is under section 103 rather than 102 — should be withdrawn because JP 60-149790 is non-analogous art. These claims are for compositions for enhancing adhesion between a copper layer and a dielectric, and include an alcohol effective to increase copper loading. In contrast, the JP reference is for stripping tin from copper, and there is no suggestion that copper loading is a concern.

Claim 10: 102(b) and JP 60-149790

Claim 10 requires that the alcohol which increases copper loading is a trihydric alcohol. It is not clear from the JP abstract whether the disclosed alcohols are dihydric (e.g., ethylene glycol or propylene glycol) or some polyhydric derivative thereof. Ethylene glycol and propylene glycol are dihydric:





If the alcohols in the JP reference are ethylene glycol and propylene glycol, therefore, they are **di**hydric and do not anticipate the **tri**hydric requirement of this claim. If, rather, the alcohols in the JP reference are derivatives of ethylene glycol and propylene glycol, whether they anticipate the requirement of this claim depends on how many hydroxyl groups they have.

Accordingly, it is respectfully submitted that, for these reasons and for the reasons stated by the Board in the Gavin case, this rejection should be withdrawn and restated, if appropriate, once a translation is available.

Claims 11-13: 103(a) and JP 60-149790

These claims 11-13 respectively require that the alcohol which increases copper loading is 0.5-20% trihydric alcohol, an oligomeric trihydric alcohol, or 0.5-20% oligomeric trihydric alcohol. For the reasons stated in connection with claim 10 and

for the reasons stated by the Board in the Gavin case, this rejection should be withdrawn.

If the translation shows that the JP alcohols are dihydric, the reference only renders it obvious to modify the JP compositions to include trihydric alcohols if the Office can point to some motivation to make that modification:

> First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP 2143, first paragraph.

Inasmuch as the JP reference relates to tin stripping and not to adhesion promotion, the motivation must be found in the reference itself or in the tin stripping art under the principles of *In re Dillon*.

Moreover, this rejection - inasmuch as it is under section 103 rather than 102 — should be withdrawn because JP 60-149790 is non-analogous art. These claims are for compositions for enhancing adhesion between a copper layer and a dielectric, and include an alcohol effective to increase copper loading. In contrast, the JP reference is for stripping tin from copper, and there is no suggestion that copper loading is a concern.

Claims 14-25

These claims were stated to be allowable.

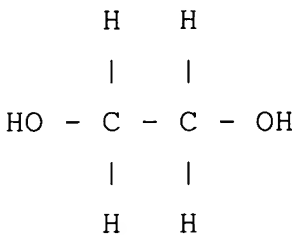
Claims 26-27: 103(a) and JP 60-149790

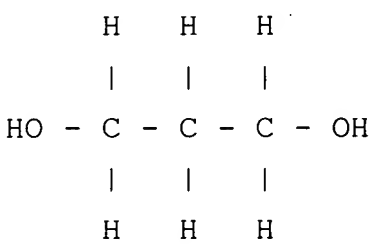
Claims 26-27 require triethylene glycol as the alcohol which is included to increase copper loading. The Office asserts

> While the reference does not teach the same alcohols as recited in instant claim ... 26 it does broadly teach the

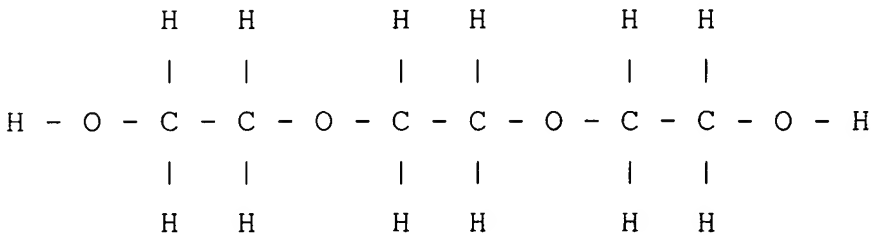
use of polyhydric alcohols. Accordingly it is believed to be well within the level of ordinary skill in the art to use any type of well known polyhydric alcohol for the polyhydric alcohol of the reference without producing any unexpected results absent evidence showing otherwise.

As discussed above, it is not clear whether the alcohols in the JP references are ethylene glycol and propylene glycol, or polyhydric derivatives thereof. In the event they are ethylene glycol and propylene glycol, there structures are as follows:





In contrast, the structure of triethylene glycol as in claims 26-27 is as follows:



In view of the substantial distinctions in these chemical structures it is respectfully submitted that the JP reference's

use of ethylene glycol and propylene glycol, if supported by the translation, does not render it obvious to employ this markedly different compound.

If the translation confirms that the JP alcohols are ethylene glycol and propylene glycol, the reference only renders it obvious to modify the JP compositions to substitute in triethylene glycol if the Office can point to some motivation to make that modification:

> First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP 2143, first paragraph.

Inasmuch as the JP reference relates to tin stripping and not to adhesion promotion, the motivation must be found in the JP reference itself or, under the principles of *In re Dillon*, in the art or knowledge specifically related to tin stripping compositions.

Moreover, if the translation confirms the JP alcohols are some "polyhydric" derivatives of ethylene glycol and propylene glycol, it cannot be obvious to substitute in the specific dihydric species of triethylene glycol unless some motivation can be shown consistent with MPEP 2143 and *Dillon*, as discussed above. TEG is only one species from among thousands in the genus of alcohols having two or more hydroxyls. Disclosure of a genus does not anticipate or render all encompassed species obvious:

> [t]he fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. (citing In re Baird, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."))

This rejection should therefore be withdrawn.

Moreover, this rejection - inasmuch as it is under section 103 rather than 102 — should be withdrawn because JP 60-149790 is non-analogous art. These claims are for compositions for enhancing adhesion between a copper layer and a dielectric, and include an alcohol effective to increase copper loading. In contrast, the JP reference is for stripping tin from copper, and there is no suggestion that copper loading is a concern.

Claim 28: 102(b)/103(a) and Ferrier and Montano References

Claim 28 requires that the composition have a Cu-loading capacity of at least 30 g Cu per liter. The Office action fails to discuss this requirement. This is an express requirement which cannot be ignored in assessing patentability.

It appears to be the Office's position that this requirement is inherently met. The Office's attention is directed to MPEP 2112. The Office must establish by fact or technical reasoning why it is necessary that the Ferrier/Montano et al. compositions have a Cu-loading capacity of at least 30 g Cu per liter:

> Inherency, however, may not be established by *probabilities* or *possibilities*. The mere fact that a certain thing ***may*** result from a given set of circumstances is not sufficient. (MPEP 2112 (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999))) (emphasis added)

> In relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic ***necessarily*** flows from the teaching of the applied prior art. (MPEP 2112 (citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990))) (emphasis added)

The Office has not demonstrated the inherency of this requirement in the Ferrier or Montano et al. compositions. No basis in fact or technical reasoning has been advanced as to why

this aspect would necessarily flow from any alcohol, generally, and from Ferrier's or Montano et al.'s alcohols, specifically.

Claims 28, 29: 102(b) and JP 60-149790

Claim 28 requires that the composition have a Cu-loading capacity of at least 30 g Cu per liter. The Office action fails to discuss this requirement. This is an express requirement which cannot be ignored in assessing patentability.

It appears to be the Office's position that this requirement is inherently met. The Office's attention is directed to MPEP 2112. The Office must establish by fact or technical reasoning why it is necessary that the JP compositions have a Cu-loading capacity of at least 30 g Cu per liter:

> Inherency, however, may not be established by *probabilities* or *possibilities*. The mere fact that a certain thing ***may*** result from a given set of circumstances is not sufficient. (MPEP 2112 (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999))) (emphasis added)

> In relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic ***necessarily*** flows from the teaching of the applied prior art. (MPEP 2112 (citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990))) (emphasis added)

The Office has not demonstrated the inherency of this requirement in the JP compositions. No basis in fact or technical reasoning has been advanced as to why this aspect would necessarily flow from any alcohol, generally, and from the JP alcohols, specifically.

Claim 30: 102(b)/103(a) and Ferrier/JP References

Claim 30 requires that the composition have < 1% Cu sludge at 120 hours with loading at 40-50 g/L Cu ions. The Office action fails to discuss this requirement. This is an express requirement which cannot be ignored in assessing patentability.

It appears to be the Office's position that this requirement is inherently met. However, the Office has not demonstrated the inherency of this requirement in the references as required under MPEP 2112. No basis in fact or technical reasoning has been advanced as to why this aspect would necessarily flow from any alcohol, generally, and from the cited alcohols, specifically.

Claim 31: 102(b) and JP 60-149790

Claim 31 requires that the composition have < 1% Cu sludge at 120 hours with loading at 40-50 g/L Cu ions. The Office action fails to discuss this requirement. This is an express requirement which cannot be ignored in assessing patentability.

It appears to be the Office's position that this requirement is inherently met. However, the Office has not demonstrated the inherency of this requirement in the references as required under MPEP 2112. No basis in fact or technical reasoning has been advanced as to why this aspect would necessarily flow from any alcohol, generally, and from the cited JP alcohols, specifically.

Claims 32-40: 103(a) and Montano et al.

The Office states Montano et al.'s disclosure of polyethylene glycol renders obvious the requirement of claims 32-40 for "an alcohol effective to increase copper loading":

> The reference clearly teaches polyethylene glycols as examples of the alcohols useable and applicant has not provided any evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to

increase copper loading in the composition. Office action, p. 10.

The rejection should be withdrawn for the following reasons:

A) Montano et al.'s genus "polyethylene glycol" which may *encompass* certain compounds of the subgenus "alcohol effective to increase copper loading" does not *render obvious* this subgenus because there is no further specific teaching in the reference in the direction of the subgenus; and

B) there has been no showing that Montano et al.'s "polyethylene glycol" inherently is effective to increase copper loading.

Regarding A, the Office's attention is directed to MPEP 2144.08. Simply disclosing a genus such as "polyethylene glycol" does not render all encompassed subgenuses and species obvious:

> [t]he fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. (citing In re Baird, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."))

According to MPEP 2144.08(II)(A), in determining whether a subgenus or species is obvious in such a situation, the Office should:

> - compare the [disclosed prior art genus] to the claimed species or subgenus to determine the differences [and]
>
> - determine whether one of ordinary skill in the relevant art would have been motivated to make the claimed invention as a whole, i.e., to select the claimed species or subgenus from the disclosed prior art genus.

This includes, among other things:

(a) Considering the size of the genus;

(b) Considering the express teachings; and

(c) Considering the teachings of structural similarity.

Here, the Office has done none of these things but has, instead, attempted to pass the burden to applicants to prove non-obviousness. Nonetheless, considering factors (a), (b), and (c), it is evident that (a) the Montano et al. genus "polyethylene glycols" is enormous since it encompasses "triethylene glycol," "tetraethylene glycol," "pentaethylene glycol," "decaethylene glycol," and alcohols with any large number of repeating units. Regarding (b) and (c), Montano et al.'s express teachings are to select the very large polymeric species available under the Carbowax name, which are wholly distinct from the much simpler compounds applicants have shown to increase copper loading. Moreover, Montano et al. appear to have been unaware of even the existence of a subgenus of compounds which increases copper loading because the reference is conspicuously silent in this regard.

With respect to B, the burden is not on the applicants to provide "evidence to the contrary which shows that polyethylene glycol will not function as an alcohol to increase copper loading in the composition." Rather, ***the Office*** must establish by fact or technical reasoning why it is necessary that the Montano et al. compositions increase copper loading:

> Inherency, however, may not be established by *probabilities* or *possibilities*. The mere fact that a certain thing ***may*** result from a given set of circumstances is not sufficient. (MPEP 2112 (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999))) (emphasis added)

> In relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic ***necessarily*** flows from the teaching of the applied prior art. (MPEP 2112 (citing Ex parte Levy,

17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990))) (emphasis added)

The Office has not demonstrated the inherency of this requirement in the Montano et al. compositions. No basis in fact or technical reasoning has been asserted as to why increased copper-loading would necessarily flow from any alcohol, generally, and from Montano et al.'s alcohols, specifically. In fact, one is inclined to conclude to the contrary because Montano et al.'s preferred water soluble polymers are, in contrast to alcohols described in applicants' specification as increasing copper loading, extremely large compounds (Carbowax and Pluronics).

Claims 32-40 are therefore patentable over Montano et al.

Claims 41-44

These claims were stated to be allowable.

Claims 55-58: 102(b) and JP 60-149790

The Office stated on page 4 of the Office action that it would forward the undersigned a full translation. This has not yet been received.

The reference as characterized in the English-language abstract does not anticipate claims 55-58 because, *inter alia*, it does not disclose the requirement for "an alcohol effective to increase copper loading," and because it is not clear if the specific alcohols disclosed therein would inherently have this characteristic. The abstract provided by the Office states "Polyhydric alcohol is, e.o., ethylene glycol or propylene glycol etc." This does not make sense because neither ethylene glycol nor propylene glycol ***is*** a polyhydric alcohol – both are dihydric. Does the JP patent disclose use of ethylene glycol and/or

propylene glycol? Or does it disclose the use of some "polyhydric" derivative thereof? "Polyhydric" usually means "containing more than two hydroxyl groups," but it is possible the JP reference meant it to mean "two or more hydroxyls." The only way to determine this is with a full translation.

Note also that in several instances in the JP abstract the additive is referred to as a polyhydric *phenol*. There is an obvious translation error in the abstract because it makes no sense. Perhaps the additives are polyhydric alcohols or polyhydric phenols *derived from* ethylene glycol or propylene glycol. In any event, any meaning given to the abstract would be speculation because of its obvious inconsistencies.

The definition of polyhydric is less important than whether the alcohols disclosed in the JP patent correspond to any of the alcohols stated in applicants' specification to "increase copper loading." If there is correspondence, then it may be reasonable to infer that the JP alcohols would increase copper loading. The rejection therefore cannot fairly be sustained until a translation is made.

Accordingly, applicants respectfully submit that the PTO's reliance on the JP abstract for what the reference discloses is improper. In the recent case of Ex parte Gavin, 62 USPQ2d 1680 (PTO Bd Pat Apps 2001), the Board vacated rejections based on two Japanese abstracts, emphasizing the following:

> "Abstracts are often not written by the author of the underlying document, and may be erroneous or misleading--in virtually all cases, they are incomplete."
>
> "Generally an abstract does not provide enough information to permit an objective evaluation of the validity of what it describes."
>
> "[A]n abstract is even less reliable a basis to extrapolate the alleged teachings of the underlying document to different circumstances. "

> "Abstracts function to alert a reader to disclosures of possible interest. They are little more reliable than headlines or brief newspaper articles."
>
> "Citation of an abstract without citation and reliance on the underlying scientific document itself is generally inappropriate where both the abstract and the underlying document are prior art."

While the Board states that reliance on abstracts without specific reliance on the teachings expressed in the underlying document is generally inappropriate, it is especially inappropriate here where the abstract contains obvious errors on its face.

The rejection of claims 55-58 in view of JP 60-149790 should therefore be withdrawn and restated, if appropriate, once a translation is available.

Claims 62 and Applicants' Prior Use

This prior use in paragraph 2 of the Declaration falls within the experimental use exception:

> A sale, offer of sale, or public use of the patented invention more than one year before the filing date of the patent application will not bar patentability under §102(b) where such sale, offer, or use was substantially for a bona fide experimental purpose to perfect the invention, rather than for commercial exploitation. MPEP §2133.03(e); Petrolite Corp. v. Baker Hughes, Inc., 96 F.3d 1423, 1426 (Fed. Cir. 1996).

The MPEP states numerous factors to assist in determining whether an experimental purpose exists:

> 1. The nature of the invention, i.e., whether it was such that any testing had to be, to some extent, public.

In this instance it was necessary to perform the tests at a customer's site to determine whether the product would perform under industrial conditions.

2. Whether the testing was conducted under the supervision and control of the inventor.

Yes.

3. Whether the inventor regularly inspected the invention during the period of experimentation.

Yes.

4. Whether any progress reports were maintained concerning the testing.

Yes.

5. Extent of any obligations or limitations placed on a user during a period of experimental activity, including whether the user was bound by a secrecy agreement.

No.

6. Explicit or implicit obligations placed on a user to supply an inventor with the results of any testing conducted during an experimental period, and the extent of inquiry made by the inventor regarding the testing.

Implicit.

7. The extent of public access to and knowledge about the use.

None.

8. Whether the user paid for the use of the invention.

Yes.

9. Conditional nature of any sale associated with the experimental activity.

Not conditional.

10. Length of time and number of cases in which the experimental activity took place, viewed in light of what is reasonably necessary for an alleged experimental purpose.

Short time and only one customer.

11. Whether the inventor disclosed to the user that the use was experimental.

Obvious from "beta site" context.

12. Effort on the part of an inventor to retrieve any experimental samples at the end of an experimental period.

No.

13. Whether the inventor disclosed to the user what the inventor considers as unsatisfactory operation of the invention.

Yes.

14. Whether future improvements were contemplated or necessary.

Yes. And these were implemented. (See Dec. Paragraph 9).

Applicants respectfully submit that from evaluation of these factors and applicants' Declaration, the use described in paragraph 2 of the Declaration should be deemed experimental.

Claim 63: 103(a) and Whitney et al. and Fairweather

Claim 63 requires the presence of dodecylbenzene sulfonic acid (DDBSA). Whitney et al. broadly disclose sulfonic acid as a component in their etch composition. Fairweather discloses aromatic sulfonic acid in an adhesion promotion composition. While these genuses encompass DDBSA, the Office's attention is directed to MPEP 2144.08. Simply disclosing a genus such as

"sulfonic acid" does not render all encompassed subgenuses and species obvious:

> [t]he fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. (citing In re Baird, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."))

According to MPEP 2144.08(II)(A), in determining whether a subgenus or species is obviousness in such a situation, the Office should:

> - compare the [disclosed prior art genus] to the claimed species or subgenus to determine the differences [and]
>
> - determine whether one of ordinary skill in the relevant art would have been motivated to make the claimed invention as a whole, i.e., to select the claimed species or subgenus from the disclosed prior art genus.

This includes, among other things:

(a) Considering the size of the genus;

(b) Considering the express teachings; and

(c) Considering the teachings of structural similarity.

The Office has done none of these things. There is nothing in the cited references to direct one toward DDBSA.

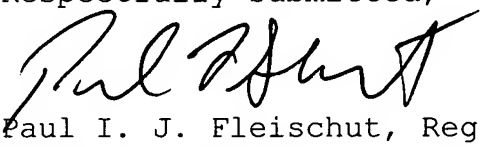
Claim 63 is therefore submitted to be patentable over the cited references.

CONCLUSION

In view of the above, applicants respectfully request allowance of all pending claims 1-44, 55-58, and 62-64.

* Enclosed is a check for $450.00 for a two-month extension of time.

Respectfully submitted,



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